UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue, Suite 900
Seattle, Washington 98101-3140

May 3, 2012

MEMORANDUM

TO: Tristen Gardner, Inspector
Office of Enforcement and Compliance
Pesticides and Toxics Unit

FROM: Brent Richmond, Credentialed Compliance Sampler
Office of Environmental Assessment
Environmental Services Unit

SUBJECT: Case Narrative for Field Technical Support – Rainier Commons

Project Code: HWD-208A
Account Code: 20122013B10P501E50

Introduction

This memorandum documents sampling conducted by EPA staff at Rainier Commons, 3100 Airport Way South, Seattle WA, on April 13, 2012. Sampling was done by Brent Richmond with support from Jennifer Crawford, Dave Bartus and Tristen Gardner. The sampling was done according to the Generic PCB quality assurance project plan (QAPP) with a TSCA PCB Site-Specific Inspection Plan approved by Don Matheny, QA Chemist.

Sampling Procedure

A total of twenty one samples were collected, one of which was a PCB equipment wipe, nine were water/liquid samples, and 11 were Sediment/Bulk samples. The samples were collected by various methods depending on the density of the sediment and the sample matrix (solid/liquid).

The water/liquid samples were collected from totes labeled T-01 to T-07 and one 55 gallon drum with a new/clean composite liquid sampler (COLIWASA). Samples were placed in clean QC class 500 milliliter (ml) glass containers to composite each sample. Each tote contained various levels of sediment and head space. Two to four dips of the COLIWASA were needed to obtain enough liquid. The composites were then quickly mixed and poured off into two clean QC class 40 ml vials.

Sediment sampling of totes T-01 to T-07 was done with a plastic bailer with the top end cut off. The totes with enough sediment to stick the bailer into the sediment and extract sample material were done in this fashion. The totes with light sediment were vacuumed using a bailer with a

hand vacuum pump attached. In each case, a new bailer was used for each individual tote. The samples were placed directly from the bailer into a clean QC class 500 ml amber jar.

Heavy material in the Clean Harbors red steel "sweepings" totes, serial numbers 10413 and 10416, were either scooped out using a stainless steel scoop on a pole (10413) or with a core sampler (10416). For each a 3x3 grid pattern was used to composite the sample in a stainless steel bowl. Tote 10416 only 6 of the 9 discrete sites were obtained due to trash and the mounding of the sweepings in the tote. Each discrete sample from the grid was placed into a clean stainless steel bowl to composite. After thoroughly mixing, the sample was placed into clean 4 ounce QC class jars.

QA/QC for the sampling event included: a field duplicate on T-05 water, a PCB wipe on sediment scoops and cores used for sampling sweepings totes, a field duplicate of the sweepings tote 10413, an extra volume for lab MS/MSD analysis was taken on T-07 liquid sample, and a field duplicate on T-01 for sediment. EPA staff also provided split samples for Rainier Commons environmental representative.

A copy of the chain of custody is included in Attachment 1(pg 3-4). A copy of the quality certification from the sample container manufacturer is included in Attachment 2 (pg 5-9). The samples were placed in a cooler with wet ice and transported under chain of custody to the EPA Region 10 Laboratory on April 13, 2012. Field logbook and original chain of custody forms will be mailed to Tristen Gardner for the case file.

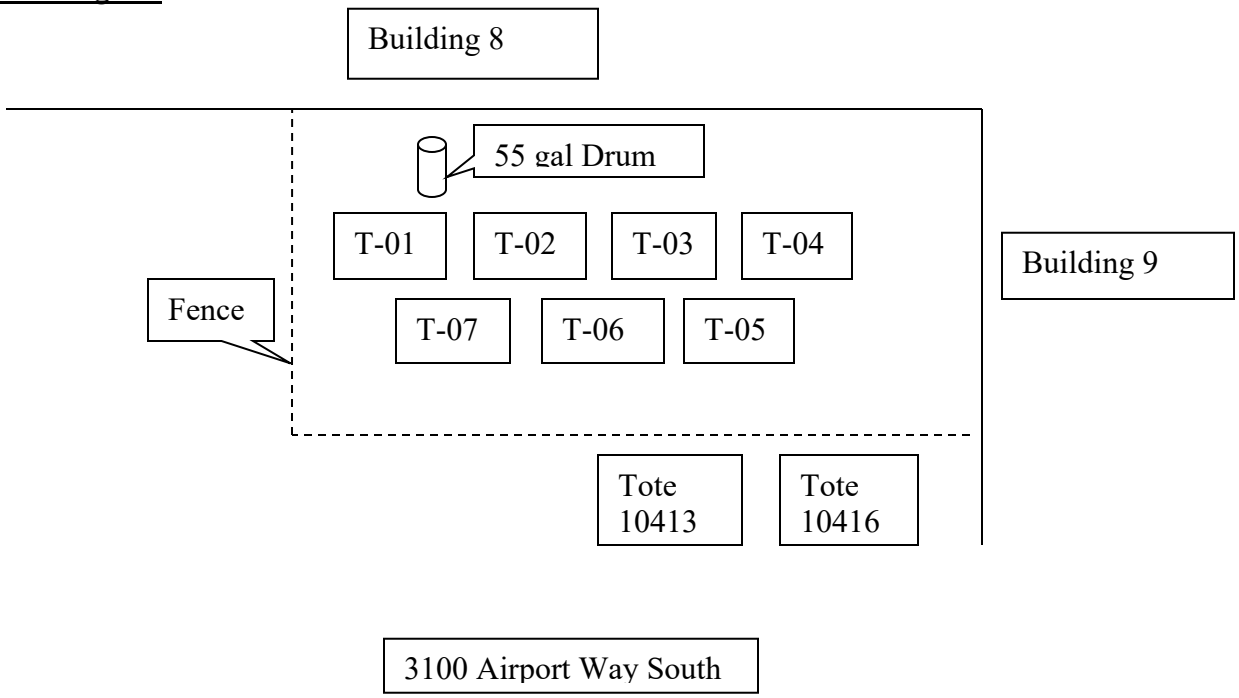
Field Analysis

No field analysis was performed.

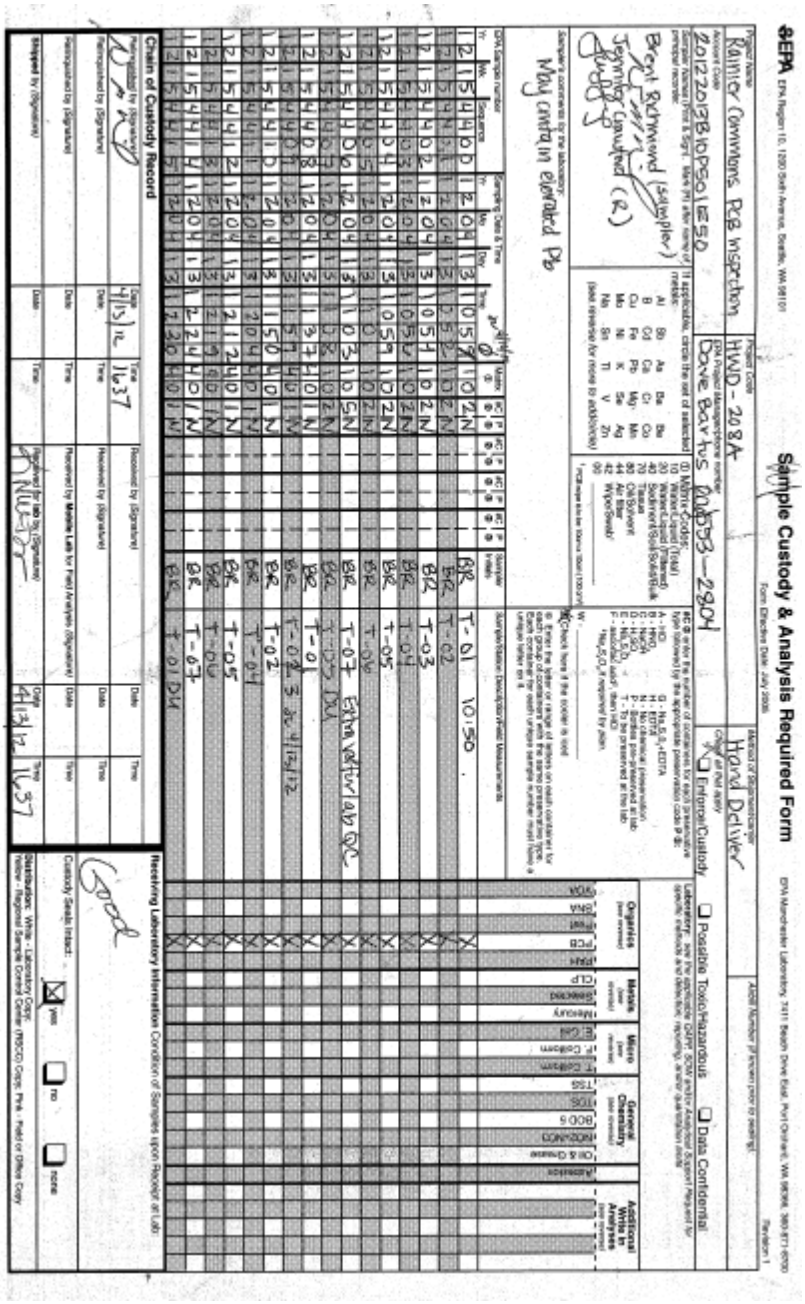
Photo Log

No photos by sampler. Inspector took all pictures.

Site Diagram



Attachment 1



EPA EPA Region 10, 1200 Sixth Avenue, Seattle, WA 98101

Sample Custody & Analysis Required Form

Form Effective Date: July 2008

EPA Manchester Laboratory, 7411 Beach Drive East, Port Orchard, WA 98366, 360-871-8700

Revision 1

Project Name: Rainier Commons PCB Insp. (TSCA)

Project Code: HWD 208A

Method of Shipment/carrier: Hand deliver

Airbill Number (if known prior to sealing):

Account Code: 20122013 B10PSO1C50

EPA Project Manager/phone number: Dave Bartus (206) 553-2804

Check all that apply: ☒ Enforce/Custody ☐ Possible Toxic/Hazardous ☐ Data Confidential

Sampler Names (Print & Sign). Mark (R) after name of principal recorder: Brent Richmond (Sampler); Jennifer Crawford (R)

If applicable, circle the set of selected metals: Al Sb As Ba Be B Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni K Se Ag Na Sn Tl V Zn (see reverse for more to add/circle)

Matrix Codes: 10 Water/Liquid (Total); 20 Water/Liquid (Filtered); 40 Sediment/Soil/Solid/Bulk; 70 Tissue; 80 Oil/Solvent; 44 Air filter; 42 Wipe/Swab*; 00 ______

* PCB wipe is to be 10cm x 10cm (100 cm²)

#C: enter the number of containers for each preservative type followed by the appropriate preservation code P: A - HCl; B - HNO_3; C - NaOH; D - H_2SO_4; E - $Na_2S_2O_3$; F - ascorbic acid*, then HCl; G - $Na_2S_2O_3$+EDTA; H - EDTA; N - No chemical preservation; P - Bottles pre-preserved at lab; T - To be preserved at the lab. *$Na_2S_2O_3$ if required by plan. W - ______

☐ Check here if the cooler is iced

Enter the letter or range of letters on each container for each group of containers with the same preservative type. Each container for each unique sample number must have a unique letter on it.

Laboratory: see the applicable QAPP, SOW and/or Analytical Support Request for specific methods and detection, reporting, and/or quantitation limits

Sampler's comments for the laboratory: May contain elevated Pb

EPA Sample number (Yr / Wk / Sequence)	Sampling Date (Yr / Mo / Day)	Time	Matrix ID	#C	P	Sampler Initials	Sample/Station Description/Field Measurements	PCB
12 15 4416	12 04 13	1150	40	2	N	BR	DRUM	X
12 15 4417	12 04 13	1347	40	1	N	BR	CHMH0071 DU ser# 10413	X
12 15 4418	12 04 13	1315	42	1	P	BR	Equip Wipe (alcohol)	X
12 15 4419	12 04 13	1306	40	1	N	BR	CHMH0041 # 10413	X
12 15 4422	12 04 13	1301	40	1	N	BR	CHMH0113 ser# 10416	X

Analyses columns: Organics (VOA, BNA, Pest, PCB, PAH); Metals (TCLP, Selected, Mercury); Micro (E Coli, F Coliform, T Coliform); General Chemistry (TSS, TDS, BOD 5, NO3+NO2, Oil & Grease); Asbestos; Additional Write in Analyses

Chain of Custody Record

Relinquished by (Signature)	Date	Time	Received by (Signature)	Date	Time
[signature]	4/13/12	1637			
Relinquished by (Signature)	Date	Time	Received by (Signature)	Date	Time
Relinquished by (Signature)	Date	Time	Received by Mobile Lab for Field Analysis (Signature)	Date	Time
Shipped by (Signature)	Date	Time	Received for lab by (Signature): [signature]	4/13/12	1637

Receiving Laboratory Information Condition of Samples upon Receipt at Lab: Good

Custody Seals Intact: ☒ yes ☐ no ☐ none

Distribution: White - Laboratory Copy; Yellow - Regional Sample Control Center (RSCC) Copy; Pink - Field or Office Copy

Attachment 2

40 ml Amber VOA

QUALITY CERTIFIED™

Certificate of Compliance

The enclosed containers have been chemically cleaned by using the specified USEPA cleaning procedures for low level chemical analysis. Representative containers have been tested by independent certified laboratories for their appropriate use. ESS containers meet and exceed the required detection limits established by the USEPA in SPECIFICATIONS AND GUIDANCE FOR CONTAMINANT-FREE SAMPLE CONTAINERS (OSWER Directive #9240.0-05A).

EXTRACTABLE ORGANIC COMPOUNDS (PROCEDURE 1)

Analyte	Quantitation Limit (ug/L)
PESTICIDES/PCB'S	
Alpha-BHC	<0.005
Beta-BHC	<0.005
Delta-BHC	<0.005
Gamma-BHC (Lindane)	<0.005
Heptachlor	<0.005
Aldrin	<0.005
Heptachlor Epoxide	<0.005
Endosulfan I	<0.005
Dieldrin	<0.005
4,4'-DDE	<0.005
Endrin	<0.005
Endosulfan II	<0.005
4,4'-DDD	<0.005
Endosulfan Sulfate	<0.005
4,4'-DDT	<0.005
Methoxychlor	<0.005
Endrin Ketone	<0.005
Endrin Aldehyde	<0.005

Alpha-Chlordane	<0.005
Gamma-Chlordane	<0.005
Toxaphene	<0.005
Aroclor-1016	<0.2
Aroclor-1221	<0.2
Aroclor-1232	<0.2
Aroclor-1242	<0.2
Aroclor-1248	<0.2
Aroclor-1254	<0.2
Aroclor-1260	<0.2
Aroclor-1262	<0.2
Aroclor-1268	<0.2
SEMIVOLATILES	
Phenol	<1
bis-(2-Chloroethyl) ether	<1
bis-(2-Chloroisopropyl) ether	<1
2-Chlorophenol	<1
2-Methylphenol	<1
2,2'-Oxybis-(1-Chloropropane)	<1

4-Methylphenol	<1
N-Nitroso-di-n-propylamine	<1
Hexachloroethane	<1
Nitrobenzene	<1
Isophorone	<1
2-Nitrophenol	<1
2,4-Dimethylphenol	<1
bis-(2-Chloroethoxy) methane	<1
2,4-Dichlorophenol	<1
1,2,4-Trichlorobenzene	<1
Naphthalene	<0.2
4-Chloroaniline	<1
Hexachlorobutadiene	<1
4-Chloro-3-Methylphenol	<1
2-Methylnaphthalene	<0.2
Hexachlorocyclopentadiene	<1
2,4,6-Trichlorophenol	<1
2,4,5-Trichlorophenol	<1
1,2-Diphenylhydrazine	<1
Carbazole	<1
2-Chloronaphthalene	<0.15

2-Nitroaniline	<1
Dimethylphthalate	<1
Acenaphthylene	<0.2
2,6-Dinitrotoluene	<1
3-Nitroaniline	<1
Acenaphthene	<0.2
2,4-Dinitrophenol	<5
4-Nitrophenol	<5
Dibenzofuran	<1
2,4-Dinitrotoluene	<1
Diethylphthalate	<1
4-Chlorophenyl-Phenylether	<1
Fluorene	<0.15
4-Nitroaniline	<1.5
4,6-Dinitro-2-Methylphenol	<1
N-Nitrosodiphenylamine	<1
N-Nitrosodimethylamine	<1
4-Bromophenyl-Phenylether	<1
Hexachlorobenzene	<1
Pentachlorophenol	<1
Phenanthrene	<0.2

Anthracene	<0.1
Di-n-Butylphthalate	<0.2
Fluoranthene	<0.1
Pyrene	<0.15
Butylbenzylphthalate	<1
3,3'-Dichlorobenzene	<1
1,4'-Dichlorobenzene	<1
1,2'-Dichlorobenzene	<1
Benzo(a)anthracene	<0.15
Chrysene	<0.1
bis-(2-Ethylhexyl) Phthalate	<1
Di-n-Octylphthalate	<1
Benzo(b)fluoranthene	<0.15
Benzo(k)fluoranthene	<0.15
Benzo(a)pyrene	<0.15
Indeno(1,2,3-cd)pyrene	<0.2
Dibenzo(a,h)anthracene	<0.15
Benzo(g,h,i)perylene	<0.15
Benzoic Acid	<5
Benzyl Alcohol	<1

PURGEABLE VOLATILE ORGANIC COMPOUNDS (PROCEDURE 2)

Analyte	Quantitation Limit (ug/L)
Acetone	<2.5
Benzene	<0.5
Bromoform	<0.5
Bromobenzene	<0.5
Bromochloromethane	<0.5
Bromodichloromethane	<0.5
Bromomethane	<0.5
n-Butylbenzene	<1
n-Butylbenzene	<0.5
sec-Butylbenzene	<0.5
tert-Butylbenzene	<0.5
Carbon Tetrachloride	<0.5
Carbon Disulfide	<0.5

Chlorobenzene	<0.5
Chloroethane	<0.5
Chloromethane	<0.5
2-Chlorotoluene	<0.5
4-Chlorotoluene	<0.5
2,4-Chlorotoluene	<0.5
Chloroform	<0.5
Dibromomethane	<0.5
1,2-Dibro 3-Chloropropane	<0.5
Dibromochloromethane	<0.5
1,2-Dibromoethane (EDB)	<0.5
1,2-Dichlorobenzene	<0.5
1,3-Dichlorobenzene	<0.5
1,4-Dichlorobenzene	<0.5
Dichlorodifluoromethane	<0.5

1,1-Dichloroethane	<0.5
1,2-Dichloroethane	<0.5
1,1-Dichloroethene	<0.5
cis-1,2-Dichloroethene	<0.5
trans-1,2-Dichloroethene	<0.5
1,2-Dichloropropane	<0.5
1,3-Dichloropropane	<0.5
2,2-Dichloropropane	<0.5
1,1-Dichloropropene	<0.5
cis-1,3-Dichloropropene	<0.5
trans-1,3-Dichloropropene	<0.5
Ethylbenzene	<0.5
2-Hexanone	<1
Hexachlorobutadiene	<0.5
Isopropylbenzene	<0.5

4-Isopropyltoluene	<0.5
Methylene Chloride	<2
Naphthalene	<0.5
Propylbenzene	<0.5
Styrene	<0.5
1,1,1,2-Tetrachloroethane	<0.5
1,1,2,2-Tetrachloroethane	<0.5
Tetrachloroethene	<0.5
Toluene	<0.5
1,2,3-Trichlorobenzene	<0.5
1,2,4-Trichlorobenzene	<0.5
1,1,1-Trichloroethane	<0.5
1,1,2-Trichloroethane	<0.5
Trichloroethene	<0.5
Trichlorofluoromethane	<0.5

Trichlorotrifluoroethane	<0.5
1,2,3-Trichloropropane	<0.5
1,2,3-Trimethylbenzene	<0.5
1,2,4-Trimethylbenzene	<0.5
1,3,5-Trimethylbenzene	<0.5
Vinyl Acetate	<1
Vinyl Chloride	<0.5
Methyl-Tert-Butyl-Ether	<0.15
4-Methyl-2-pentanone	<1
ethyl-tert-butylether	<0.15
tert-amylmethylether	<0.15
diisopropylether	<0.15
tert-butanol	<0.15
o-xylene	<0.5
m-xylene(1)	<0.5
p-xylene(1)	<0.5

METALS, CYANIDE & SULFIDE COMPOUNDS (PROCEDURE 3)

Analyte	Detection Limit (ug/L)
Aluminum	<0.5
Antimony	<0.03
Arsenic	<0.01
Barium	<0.03

Beryllium	<0.01
Cadmium	<0.03
Calcium	<50
Chromium	<0.06
Cobalt	<0.25
Copper	<0.08

Iron	<3
Lead	<0.05
Magnesium	<4
Manganese	<0.1
Mercury	<0.2
Molybdenum	<0.5

Nickel	<0.05
Potassium	<50
Selenium	<0.5
Silver	<0.02
Sodium	<6
Thallium	<0.09

Vanadium	<1
Zinc	<0.3
Cyanide	<5
Flouride	<100
Nitrate + Nitrite	<50

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PRODUCT LOT NUMBER
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Matthew Macy, Vice President ESS Inc.

16 oz Amber Wide Mouth Jar

QUALITY CERTIFIED™

Certificate of Compliance

The enclosed containers have been chemically cleaned by using the specified USEPA cleaning procedures for low level chemical analysis. Representative containers have been tested by independent certified laboratories for their appropriate use. ESS containers meet and exceed the required detection limits established by the USEPA in SPECIFICATIONS AND GUIDANCE FOR CONTAMINANT-FREE SAMPLE CONTAINERS (OSWER Directive #9240.0-05A).

EXTRACTABLE ORGANIC COMPOUNDS (PROCEDURE 1)

Analyte	Quantitation Limit (ug/L)
PESTICIDES/PCB'S	
Alpha BHC	<0.005
Beta BHC	<0.005
Delta BHC	<0.005
Gamma BHC (Lindane)	<0.005
Heptachlor	<0.005
Aldrin	<0.005
Heptachlor Epoxide	<0.005
Endosulfan I	<0.005
Dieldrin	<0.005
4,4'-DDE	<0.005
Endrin	<0.005
Endosulfan II	<0.005
4,4'-DDD	<0.005
Endosulfan Sulfate	<0.005
4,4'-DDT	<0.005
Methoxychlor	<0.005
Endrin Ketone	<0.005
Endrin Aldehyde	<0.005
Alpha-Chlordane	<0.005
Gamma-Chlordane	<0.005
Toxaphene	<0.005
Aroclor-1016	<0.2
Aroclor-1221	<0.2
Aroclor-1232	<0.2
Aroclor-1242	<0.2
Aroclor-1248	<0.2
Aroclor-1254	<0.2
Aroclor-1260	<0.2
Aroclor-1262	<0.2
Aroclor-1268	<0.2
SEMIVOLATILES	
Phenol	<1
bis-(2-Chloroethyl) ether	<1
bis-(2-Chloroisopropyl) ether	<1
2-Chlorophenol	<1
2-Methylphenol	<1
2,2'-Oxybis (1-Chloropropane)	<1
4-Methylphenol	<1
N-Nitroso-di-n-propylamine	<1
Hexachloroethane	<1
Nitrobenzene	<1
Isophorone	<1
2-Nitrophenol	<1
2,4-Dimethylphenol	<1
bis-(2-Chloroethoxy) methane	<1
2,4-Dichlorophenol	<1
1,2,4-Trichlorobenzene	<1
Naphthalene	<0.2
4-Chloroaniline	<1
Hexachlorobutadiene	<1
4-Chloro-3-Methylphenol	<1
2-Methylnaphthalene	<0.2
Hexachlorocyclopentadiene	<1
2,4,6-Trichlorophenol	<1
2,4,5-Trichlorophenol	<1
1,2-Diphenylhydrazine	<1
Carbazole	<1
2-Chloronaphthalene	<0.15
2-Nitroaniline	<1
Dimethylphthalate	<1
Acenaphthylene	<0.2
2,6-Dinitrotoluene	<1
3-Nitroaniline	<1
Acenaphthene	<0.2
2,4-Dinitrophenol	<5
4-Nitrophenol	<5
Dibenzofuran	<1
2,4-Dinitrotoluene	<1
Diethylphthalate	<1
4-Chlorophenyl-Phenylether	<1
Fluorene	<0.15
4-Nitroaniline	<1.5
4,6-Dinitro-2-Methylphenol	<1
N-Nitrosodiphenylamine	<1
N-Nitrosodimethylamine	<1
4-Bromophenyl-Phenylether	<1
Hexachlorobenzene	<1
Pentachlorophenol	<1
Phenanthrene	<0.2
Anthracene	<0.1
Di-n-Butylphthalate	<0.2
Fluoranthene	<0.1
Pyrene	<0.15
Butylbenzylphthalate	<1
3,3'-Dichlorobenzene	<1
1,2'-Dichlorobenzene	<1
1,4'-Dichlorobenzene	<1
3,3'-Dichlorobenzidine	<1
Benzo(a)anthracene	<0.15
Chrysene	<0.1
bis-(2-Ethylhexyl) Phthalate	<1
Di-n-Octylphthalate	<1
Benzo(b)fluoranthene	<0.2
Benzo(k)fluoranthene	<0.15
Benzo(a)pyrene	<0.15
Indeno(1,2,3-cd)pyrene	<0.2
Dibenzo(a,h)anthracene	<0.15
Benzo(g,h,i)perylene	<0.15
Benzoic Acid	<5
Benzyl Alcohol	<1

PURGEABLE VOLATILE ORGANIC COMPOUNDS (PROCEDURE 2)

Analyte	Quantitation Limit (ug/L)
Acetone	<2.0
Benzene	<0.1
Bromoform	<0.1
Bromobenzene	<0.1
Bromochloromethane	<0.1
Bromodichloromethane	<0.1
Bromomethane	<0.1
2-Butylbenzene	<0.1
n-Butylbenzene	<0.1
sec-Butylbenzene	<0.1
tert-Butylbenzene	<0.1
Carbon Tetrachloride	<0.1
Carbon Disulfide	<0.1
Chlorobenzene	<0.1
Chloroethane	<0.1
Chloromethane	<0.1
2-Chlorotoluene	<0.1
4-Chlorotoluene	<0.1
2,4-Chlorotoluene	<0.2
Chloroform	<0.1
Dibromomethane	<0.1
1,2-Dibro 3-Chloropropane	<0.1
Dibromochloromethane	<0.1
1,2-Dibromoethane (EDB)	<0.1
1,2-Dichlorobenzene	<0.1
1,3-Dichlorobenzene	<0.1
1,4-Dichlorobenzene	<0.1
Dichlorodifluoromethane	<0.1
1,1-Dichloroethane	<0.1
1,2-Dichloroethane	<0.1
1,1-Dichloroethene	<0.1
cis-1,2-Dichloroethene	<0.1
trans-1,2-Dichloroethene	<0.1
1,2-Dichloropropane	<0.1
1,3-Dichloropropane	<0.1
2,2-Dichloropropane	<0.1
1,1-Dichloropropene	<0.1
cis-1,3-Dichloropropene	<0.1
trans-1,3-Dichloropropene	<0.1
Ethylbenzene	<0.1
2-Hexanone	<0.5
Hexachlorobutadiene	<0.1
Isopropylbenzene	<0.1
4-Isopropyltoluene	<0.1
Methylene Chloride	<0.5
Naphthalene	<0.5
Propylbenzene	<0.1
Styrene	<0.1
1,1,1,2-Tetrachloroethane	<0.1
1,1,2,2-Tetrachloroethane	<0.1
Tetrachloroethene	<0.1
Toluene	<0.1
1,2,3-Trichlorobenzene	<0.1
1,2,4-Trichlorobenzene	<0.1
1,1,1-Trichloroethane	<0.1
1,1,2-Trichloroethane	<0.1
Trichloroethene	<0.1
Trichlorofluoromethane	<0.1
Trichlorotrifluoroethane	<0.1
1,2,3-Trichloropropane	<0.1
1,2,3-Trimethylbenzene	<0.1
1,2,4-Trimethylbenzene	<0.1
1,3,5-Trimethylbenzene	<0.1
Vinyl Acetate	<0.5
Vinyl Chloride	<0.1
Methyl Tert-Butyl Ether	<0.1
4-Methyl-2-pentanone	<0.5
ethyl-tert-butylether	<0.1
tert-amylmethylether	<0.1
diisopropylether	<0.1
tert-butanol	<0.1
o-xylene	<0.1
m-xylene(1)	<0.2
p-xylene(1)	<0.2

METALS, CYANIDE & SULFIDE COMPOUNDS (PROCEDURE 3)

Analyte	Detection Limit (ug/L)
Aluminum	<0.5
Antimony	<0.03
Arsenic	<0.01
Barium	<0.03
Beryllium	<0.01
Cadmium	<0.03
Calcium	<50
Chromium	<0.06
Cobalt	<0.25
Copper	<0.08
Iron	<3
Lead	<0.05
Magnesium	<4
Manganese	<0.1
Mercury	<0.2
Molybdenum	<0.5
Nickel	<0.05
Potassium	<50
Selenium	<0.5
Silver	<0.02
Sodium	<6
Thallium	<0.09
Vanadium	<1
Zinc	<0.3
Cyanide	<5
Flouride	<100
Nitrate + Nitrite	<50

ON-TIME PRODUCTS FOR ENVIRONMENTAL SAMPLING & ANALYSIS

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PRODUCT LOT NUMBER
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For more information on our cleaning & monitoring procedures, please call
1-800-233-8425

Matthew Macy, Vice President ESS Inc.

4 oz Wide Mouth Clear

PRECLEANED CERTIFIED

Certificate of Compliance

The enclosed containers have been chemically cleaned by using the specified USEPA cleaning procedures for low level chemical analysis. Representative containers have been tested by independent certified laboratories for their appropriate use. ESS containers meet and exceed the required detection limits established by the USEPA in SPECIFICATIONS AND GUIDANCE FOR CONTAMINANT-FREE SAMPLE CONTAINERS (OSWER Directive #9240.0-05A).

EXTRACTABLE ORGANIC COMPOUNDS (PROCEDURE 1)

Analyte	Quantitation Limit (ug/L)
PESTICIDES/PCB'S	
Alpha-BHC	<0.005
Beta-BHC	<0.005
Delta-BHC	<0.005
Gamma-BHC (Lindane)	<0.005
Heptachlor	<0.005
Aldrin	<0.005
Heptachlor Epoxide	<0.005
Endosulfan I	<0.005
Dieldrin	<0.005
4,4'-DDE	<0.005
Endrin	<0.005
Endosulfan II	<0.005
4,4'-DDD	<0.005
Endosulfan Sulfate	<0.005
4,4'-DDT	<0.005
Methoxychlor	<0.005
Endrin Ketone	<0.005
Endrin Aldehyde	<0.005
Alpha-Chlordane	<0.005
Gamma-Chlordane	<0.005
Toxaphene	<0.005
Aroclor-1016	<0.2
Aroclor-1221	<0.2
Aroclor-1232	<0.2
Aroclor-1242	<0.2
Aroclor-1248	<0.2
Aroclor-1254	<0.2
Aroclor-1260	<0.2
Aroclor-1262	<0.2
Aroclor-1268	<0.2
SEMIVOLATILES	
Phenol	<1
bis-(2-Chloroethyl) ether	<1
bis-(2-Chloroisopropyl) ether	<1
2-Chlorophenol	<1
2-Methylphenol	<1
2,2'-Oxybis (1-Chloropropane)	<1
3-Methylphenol	<1
N-Nitroso-di-n-propylamine	<1
Hexachloroethane	<1
Nitrobenzene	<1
Isophorone	<1
2-Nitrophenol	<1
2,4-Dimethylphenol	<1
bis-(2-Chloroethoxy) methane	<1
2,4-Dichlorophenol	<1
1,2,4-Trichlorobenzene	<1
Naphthalene	<0.2
4-Chloroaniline	<1
Hexachlorobutadiene	<1
4-Chloro-3-Methylphenol	<1
2-Methylnaphthalene	<0.2
Hexachlorocyclopentadiene	<1
2,4,6-Trichlorophenol	<1
2,4,5-Trichlorophenol	<1
1,2-Diphenylhydrazene	<1
Carbazole	<1
2-Chloronaphthalene	<0.15
2-Nitroaniline	<1
Dimethylphthalate	<1
Acenaphthylene	<0.2
2,6-Dinitrotoluene	<1
3-Nitroaniline	<1
Acenaphthene	<0.2
2,4-Dinitrophenol	<5
4-Nitrophenol	<5
Dibenzofuran	<1
2,4-Dinitrotoluene	<1
Diethylphthalate	<1
4-Chlorophenyl-Phenylether	<1
Fluorene	<0.15
4-Nitroaniline	<1.5
4,6-Dinitro-2-Methylphenol	<0.2
N-Nitrosodiphenylamine	<1
N-Nitrosodimethylamine	<1
4-Bromophenyl-Phenylether	<1
Hexachlorobenzene	<1
Pentachlorophenol	<1
Phenanthrene	<0.2
Anthracene	<0.1
Di-n-butylphthalate	<0.2
Fluoranthene	<0.1
Pyrene	<0.15
Butylbenzylphthalate	<1
1,2'-Dichlorobenzene	<1
1,3'-Dichlorobenzene	<1
1,4'-Dichlorobenzene	<1
3,3'-Dichlorobenzidine	<1
Benzo(a)anthracene	<0.15
Chrysene	<0.1
bis-(2-Ethylhexyl) Phthalate	<1
Di-n-Octylphthalate	<1
Benzo(b)fluoranthene	<0.2
Benzo(k)fluoranthene	<0.15
Benzo(a)pyrene	<0.15
Indeno(1,2,3-cd)pyrene	<0.2
Dibenzo(a,h)anthracene	<0.15
Benzo(g,h,i)perylene	<0.15
Benzoic Acid	<5
Benzyl Alcohol	<1

PURGEABLE VOLATILE ORGANIC COMPOUNDS (PROCEDURE 2)

Analyte	Quantitation Limit (ug/L)
Acetone	<2.0
Benzene	<0.1
Bromoform	<0.1
Bromobenzene	<0.1
Bromochloromethane	<0.1
Bromodichloromethane	<0.1
Bromomethane	<0.1
n-Butylbenzene	<0.1
sec-Butylbenzene	<0.1
tert-Butylbenzene	<0.1
Carbon Tetrachloride	<0.1
Carbon Disulfide	<0.1
Chlorobenzene	<0.1
Chloroethane	<0.1
Chloromethane	<0.1
2-Chlorotoluene	<0.1
4-Chlorotoluene	<0.1
2,4-Chlorotoluene	<0.2
Chloroform	<0.1
Dibromomethane	<0.1
1,2-Dibro 3-Chloropropane	<0.1
Dibromochloromethane	<0.1
1,2-Dibromoethane (EDB)	<0.1
1,2-Dichlorobenzene	<0.1
1,3-Dichlorobenzene	<0.1
1,4-Dichlorobenzene	<0.1
Dichlorodifluoromethane	<0.1
1,1-Dichloroethane	<0.1
1,2-Dichloroethane	<0.1
1,1-Dichloroethene	<0.1
cis-1,2-Dichloroethene	<0.1
trans-1,2-Dichloroethene	<0.1
1,2-Dichloropropane	<0.1
1,3-Dichloropropane	<0.1
2,2-Dichloropropane	<0.1
1,1-Dichloropropene	<0.1
cis-1,3-Dichloropropene	<0.1
trans-1,3-Dichloropropene	<0.1
Ethylbenzene	<0.1
2-Hexanone	<0.5
Hexachlorobutadiene	<0.1
Isopropylbenzene	<0.1
4-Isopropyltoluene	<0.1
Methylene Chloride	<0.5
Naphalene	<0.5
Propylbenzene	<0.1
Styrene	<0.1
1,1,1,2-Tetrachloroethane	<0.1
1,1,2,2-Tetrachloroethane	<0.1
Tetrachloroethene	<0.1
Toluene	<0.1
1,2,3-Trichlorobenzene	<0.1
1,2,4-Trichlorobenzene	<0.1
1,1,1-Trichloroethane	<0.1
1,1,3-Trichloroethane	<0.1
Trichloroethene	<0.1
Trichlorofluoromethane	<0.1
Trichlorotrifluoroethane	<0.1
1,2,3-Trichloropropane	<0.1
1,2,3-Trimethylbenzene	<0.1
1,2,4-Trimethylbenzene	<0.1
1,3,5-Trimethylbenzene	<0.1
Vinyl Acetate	<0.5
Vinyl Chloride	<0.1
Methyl-Tert-Butyl-Ether	<0.1
4-Methyl-2-pentanone	<0.5
ethyl-tert-butylether	<0.1
tert-amylmethylether	<0.1
diisopropylether	<0.1
tert-butanol	<0.1
o-xylene	<0.1
m-xylene(1)	<0.2
p-xylene(1)	<0.2

METALS, CYANIDE & SULFIDE COMPOUNDS (PROCEDURE 3)

Analyte	Detection Limit (ug/L)
Aluminum	<0.5
Antimony	<0.03
Arsenic	<0.01
Barium	<0.03
Beryllium	<0.01
Cadmium	<0.03
Calcium	<50
Chromium	<0.06
Cobalt	<0.25
Copper	<0.08
Iron	<3
Lead	<0.05
Magnesium	<4
Manganese	<0.1
Mercury	<0.2
Molybdenum	<0.5
Nickel	<0.05
Potassium	<50
Selenium	<0.5
Silver	<0.02
Sodium	<6
Thallium	<0.09
Vanadium	<1
Zinc	<0.3
Cyanide	<5
Fluoride	<100
Nitrate + Nitrite	<50

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Matthew Macy, Vice President ESS Inc

091910

1 Liter Wide Mouth Clear Jar

QC-B-001
Rev. 0

Eagle-Picher
Certificate of Analysis

Organic and Inorganic Quality Assurance — For Assistance Call 800-331-7426

Bottle Type & QA Level: 7 Level 1 — Approved:

Description: 1 Liter Clear Wide Mouth — Lot No.: J9237010

Eagle-Picher Level 1 products have been tested and found to comply with or to be lower than the EPA detection limits as stated in OSWER Directive # 9240.0-05A "Specifications And Guidance For Contaminant-Free Sample Containers 12/92". Eagle-Picher pass/fail criteria considers all significant non-target compounds.

SEMIVOLATILES ANALYTES	(µg/L)
Phenol	< 5
bis-(2-Chloroethyl)ether	< 5
2-Chlorophenol	< 5
2-Methylphenol	< 5
2,2'-oxybis (1-Chloropropane)	< 5
4-Methylphenol	< 5
N-Nitroso-di-n-propylamine	< 5
Hexachloroethane	< 5
Nitrobenzene	< 5
Isophorone	< 5
2-Nitrophenol	< 5
2,4-Dimethylphenol	< 5
bis-(2-Chloroethoxy)methane	< 5
2,4-Dichlorophenol	< 5
1,2,4-Trichlorobenzene	< 5
Naphthalene	< 5
4-Chloroaniline	< 5
Hexachlorobutadiene	< 5
4-Chloro-3-methylphenol	< 5
2-Methylnaphthalene	< 5
Hexachlorocyclopentadiene	< 5
2,4,6-Trichlorophenol	< 5
2,4,5-Trichlorophenol	< 20
2-Chloronaphthalene	< 5
2-Nitroaniline	< 20
Dimethylphthalate	< 5
Acenaphthylene	< 5
2,6-Dinitrotoluene	< 5
3-Nitroaniline	< 20
Acenaphthene	< 5
Benzyl alcohol*	< 5
1,3-Dichlorobenzene*	< 5
Benzoic Acid*	< 5
N-Nitrosodimethylamine*	< 5

SEMIVOLATILE ANALYTES	(µg/L)
2,4-Dinitrophenol	< 20
4-Nitrophenol	< 20
Dibenzofuran	< 5
2,4-Dinitrotoluene	< 5
Diethylphthalate	< 5
4-Chlorophenyl-phenylether	< 5
Fluorene	< 5
4-Nitroaniline	< 20
4,6-Dinitro-2-methylphenol	< 20
N-Nitrosodiphenylamine	< 5
4-Bromophenyl-phenylether	< 5
Hexachlorobenzene	< 5
Pentachlorophenol	< 20
Phenanthrene	< 5
Anthracene	< 5
Di-n-butylphthalate	< 5
Fluoranthene	< 5
Pyrene	< 5
Butylbenzylphthalate	< 5
3,3'-Dichlorobenzidine	< 5
Benzo(a)anthracene	< 5
Chrysene	< 5
bis-(2-Ethylhexyl)phthalate	< 5
Di-n-octylphthalate	< 5
Benzo(b)fluoranthene	< 5
Benzo(k)fluoranthene	< 5
Benzo(a)pyrene	< 5
Indeno(1,2,3-cd)pyrene	< 5
Dibenz(a,h)anthracene	< 5
Benzo(g,h,i)perylene	< 5
1,3-Dichlorobenzene*	< 5
Carbazole*	< 5
1,4-Dichlorobenzene*	< 5
Azobenzene*	< 5

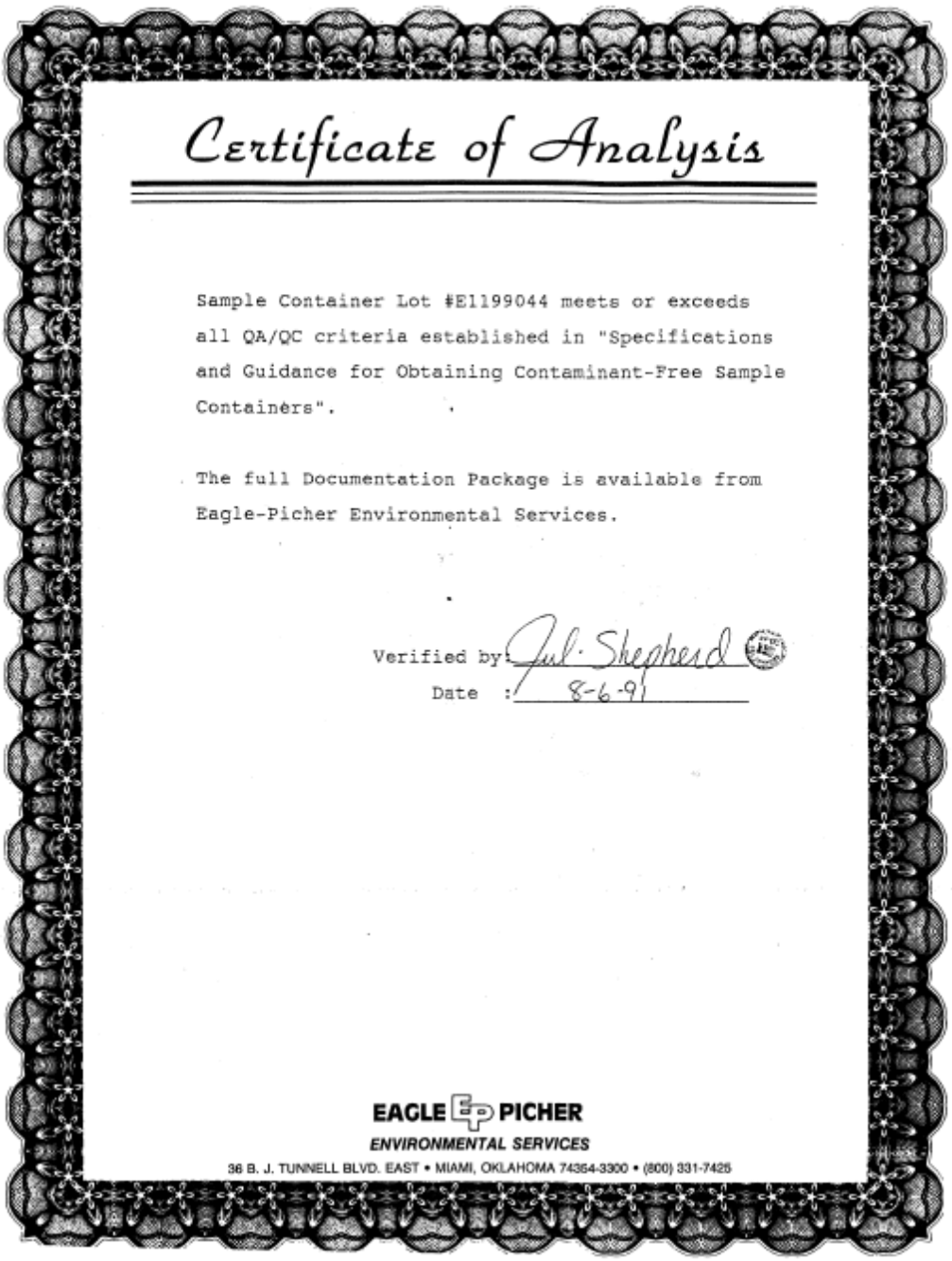
INORGANIC ANALYTES		(µg/L)
Ag	(Silver)	< 5
Al	(Aluminum)	< 50
As	(Arsenic)	< 1
Ba	(Barium)	< 10
Be	(Beryllium)	< 0.5
Ca	(Calcium)	< 500
Cd	(Cadmium)	< 1
CN	(Cyanide)	< 10
Co	(Cobalt)	< 5
Cr	(Chromium)	< 5
Cu	(Copper)	< 5
F	(Fluoride)	< 200
Fe	(Iron)	< 50
Hg	(Mercury)	< 0.2
K	(Potassium)	< 100
Mg	(Magnesium)	< 50
Mn	(Manganese)	< 5
Na	(Sodium)	< 5000
Ni	(Nickel)	< 10
Pb	(Lead)	< 1
Sb	(Antimony)	< 2
Se	(Selenium)	< 2
Tl	(Thallium)	< 5
V	(Vanadium)	< 5
Zn	(Zinc)	< 10

PESTICIDE ANALYTES	(ng/L)
alpha-BHC	< 0.01
beta-BHC	< 0.01
delta-BHC	< 0.01
gamma-BHC (Lindane)	< 0.01
Heptachlor	< 0.01
Aldrin	< 0.01
Heptachlor epoxide	< 0.01
Endosulfan I	< 0.01
Dieldrin	< 0.02
4,4'-DDE	< 0.02
Endrin	< 0.02
Endosulfan II	< 0.02
4,4'-DDD	< 0.02
Endosulfan sulfate	< 0.02
4,4'-DDT	< 0.02
Methoxychlor	< 0.10
Endrin ketone	< 0.02
Endrin aldehyde	< 0.02
alpha-Chlordane	< 0.01
gamma-Chlordane	< 0.01
Toxaphene	< 1.0
Aroclor-1016, Aroclor-1232	< 0.20
Aroclor-1242, Aroclor-1248	< 0.20
Aroclor-1254, Aroclor-1260	< 0.20
Aroclor-1221	< 0.40
Aroclor-1262*, Aroclor-1268*	< 0.20

*Analyte not listed as a target compound in the OSWER Directive.

Eagle-Picher Technologies Division — 209 B.J. Tunnell Blvd. Miami, OK 74354 — Fax (918)540-1659

16 oz Clear Wide Mouth Jar



Certificate of Analysis

Sample Container Lot #E1199044 meets or exceeds all QA/QC criteria established in "Specifications and Guidance for Obtaining Contaminant-Free Sample Containers".

The full Documentation Package is available from Eagle-Picher Environmental Services.

Verified by: Jul. Shepherd

Date : 8-6-91

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